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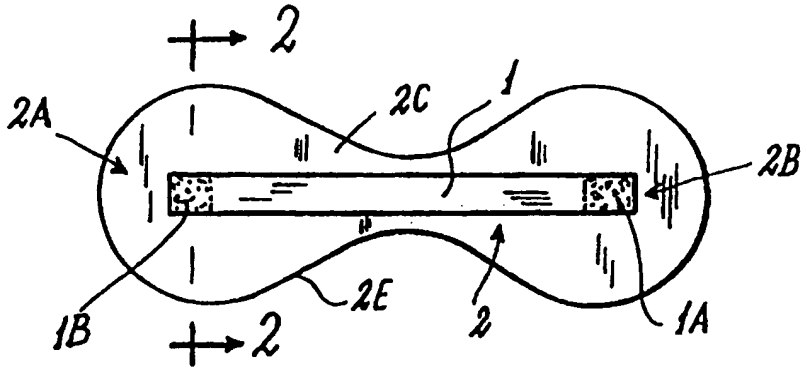
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(54) Title: NASAL DILATOR COMPRISING A SMALL NUMBER OF COMPONENTS

(57) Abstract

A device applicable to the exterior of the nose to dilate the nasal passages, comprising only three parts, namely a first part consisting of an elastically deformable element of plastic material, a second part consisting of a thin flexible soft strip (2) of plastic material, fixed at least to the two ends (1a, 1b) of said element (1), and a third part consisting of an adhesive substance (3) applied at least in correspondence with the two end regions (2a, 2b) of the strip (2), on the opposite surface (2d) thereof to that on which the element (1) is fixed.



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NASAL DILATOR COMPRISING A SMALL NUMBER OF COMPONENTS

This invention relates to a device applicable to the exterior of the nose to dilate the nasal passages, in accordance with the pre-characterising part of claim 1, and a method for its formation.

Devices of the aforesaid type have been known for some time and used in particular in the sporting field to improve athletes' respiration.

US patent 1292083 describes a nasal dilator containing two discs comprising along one of their faces an adhesive substance which enables the discs to be applied to the nose in correspondence with the nasal passages. The dilator also comprises a flexible metal bar, the ends of which can be removably connected to the two discs. This bar exerts on the discs a force able to dilate the nasal passages. As the flexible bar is not rigidly joined to the two discs it can happen that it becomes detached from the discs. This not only nullifies the effect of the dilator but can also result in injury to the face or eyes of the person wearing the device, particularly if the dilator is used during sporting activity. The metal bar has also proved dangerous in the case of accidental impacts, these being particularly frequent for persons practising sporting activities. The aforesaid drawbacks are overcome by the dilator described in the patent application WO92/22340 which describes a nasal dilator in the form of a sticking plaster, comprising six parts joined together. Because of the relatively large number of components, this dilator is of rather complicated construction, this considerably affecting the production time and in particular its cost.

Known dilators are not permeable to the sun's rays, consequently if they are used in the open air on sunny days, when the dilator is removed from the nose that region thereof to which it was applied is of different colour from the remainder of the nose and more generally of the face. This side effect of known dilators is generally not well tolerated by the dilator user.

An object of the present invention is to provide a device applicable to the exterior of the nose to dilate the nasal passages, which comprises a small number of components rigidly fixed together, and is of simple and rapid assembly and production.

A further object is to provide a device which is at least partially permeable to the sun's rays so as not to completely mask that nose region to which the device is applied.

These and further objects which will be apparent to the expert of the art are attained by a device in accordance with the characterising part of the accompanying claims.

The present invention will be more apparent from the accompanying drawings, which are provided by way of non-limiting example and on which:

Figure 1 is a schematic top view of a device according to the invention;
Figure 2 is an enlarged schematic section therethrough taken on the line 2/2 of Figure 1.

With reference to said figures, a device according to the invention consists of only three parts, namely a first part consisting of an elastically deformable element 1, a second part consisting of a thin flexible soft strip 2, and a third part consisting of an adhesive substance 3. The elastically deformable element 1 is of elongate flat shape and is constructed of a conventional plastic material suitable for the purpose, for

example anallergic PVC of thickness 100-150 microns. The ends 1a, 1b of the element 1 are rigidly fixed to the strip 2, for example by thermowelding.

In the illustrated example, the strip 2 is in the shape of a flat figure eight and comprises two end regions 2a, 2b shaped and dimensioned in such a manner as to be able to be applied to the skin of the nose in correspondence with the nasal passages. The element 1 is fixed to the strip 2 preferably in correspondence with a central portion of the two end regions 2a, 2b of the strip. The two end regions 2a, 2b are connected together by a central region 2c able to adhere to the bridge of the nose. The strip 2 preferably has a thickness less than that of the element 1 and is constructed of any plastic material suitable for the purpose, such as anallergic PVC of thickness 40-90 microns.

The adhesive substance 3 can be of any conventional type suitable for the purpose, for example of biocompatible acrylic type. This substance is preferably spread over the entire lower face 2d of the strip 2, in other words over that face which comes into contact with the skin of the nose. Because of the fact that the deformable element 1 is fixed to the strip 2 only at its ends 1a, 1b, the dilatory action of the element 1 is better than known devices in that because of its central region 2c, the strip 2 provides excellent adherence to the skin of the nose. Advantageously, the adhesive substance 3 can contain a substance which facilitates respiration, for example a menthol-based substance. To the adhesive substance there could also be added a cosmetic or curative substance of a type known to the expert of the art.

It should be noted that said further substances to be added to the adhesive substance could also be added to the adhesive substance present in known devices. These curative or cosmetic substances could be added not only to the adhesive substance but also, or only, to the other components of the device.

Advantageously, the element 1, the strip 2 and the adhesive substance 3 are formed of materials of types known to the expert of the art which are at least partially permeable to the sun's rays, so that when the device is removed after being worn in the open air, that nose region to which it was applied is of substantially the same colour as the rest of the facial skin. To prevent burning of that part of the nose to which the device is applied, the strip 2 can be formed of any known anallergic plastic material which is only partially permeable to the sun's rays, or any further known substance providing a protective action can be added to the adhesive substance 3.

It should be noted that said further characteristic of at least partial permeability to the sun's rays could also be provided in known devices.

In a non-represented modification of the embodiment heretofore described, the deformable element has a shape substantially equal to that of the strip 2 and hence becomes completely superposed on said strip. In this case, as in the preceding case, the deformable element may be fixed to the strip only at its ends or can instead be completely fixed to the strip 2, so as to form one piece with this latter.

Advantageously, to prevent the edge of the element 1, which is more rigid than that of the strip 2, from coming into contact with the skin of the nose, the strip 2 is slightly larger than the element 1, so that only the soft edge 2e of the strip 2 comes into contact with skin of the nose.

To construct the devices of the invention the procedure is as follows: in a first step the elements 1 are punched out of a first sheet of a material suitable for said elements, in such a manner that they still remain at least partly attached to said first sheet. The punched first sheet is then superposed on one face of a second sheet of a material of type suitable for the strips 2 and having on its other face the previously spread

substance 3. The ends of the element 1 are then welded to the second sheet. The first sheet is then detached from the second so that the previously punched and welded elements 1 remain in contact with the second sheet. Finally, the second sheet is punched to form the strips 2 with the elements 1 fixed to them. The described procedure is extremely simple and rapid and enables the production costs of the device to be considerably reduced compared with known procedures. It should be noted that the aforedescribed procedure can be further simplified by including a first step in which the two sheets of suitable type for the elements 1 and the strips 2 are firstly superposed, and a second step in which both sheets are punched simultaneously so as to form the elements 1 and the strips 2, and in which the elements 1 are welded to the strip 2.

Finally it should be noted that the aforedescribed embodiments are provided by way of example only, and that numerous modifications are possible all falling within the same inventive concept, for example the shape of the strip 2 and/or of the element 1 could be different from that described. In particular, the strip 2 could be without its central part 2c and could hence comprise only the two end parts 2a and 2b connected together only by the element 1.

Claims:

1. A device applicable to the exterior of the nose to dilate the nasal passages, comprising an elastically deformable element (1) of elongate shape formed of a plastic material, at least its two ends (1a, 1b) being provided with an adhesive substance (3) of type compatible with the skin of the nose, characterised by consisting of only three parts, of which a first part consists of said elastically deformable element (1), the second part consists of a thin flexible soft strip (2) of plastic material, fixed at least to the two ends (1a, 1b) of said element (1) and comprising two end regions (2a, 2b) to be applied to the nasal passages, and the third part consists of said adhesive substance (3), which is applied at least in correspondence with said two end regions (2a, 2b) of the strip (2), on the opposite surface (2d) thereof to that on which the element (1) is fixed.

2. A device as claimed in claim 1, characterised in that the deformable element (1) is fixed to the strip (2) only at its two ends (1a, 1b), said ends being fixed to a central portion of the two end regions (2a, 2b) of the strip (2), which are applied to the nasal passages.

3. A device as claimed in claim 1, characterised in that the three parts (1, 2, 3) are at least partially transparent to the sun's rays so that that region of the nose to which the device is applied is also irradiated.

4. A device as claimed in claim 3, characterised in that at least one of the three parts (1, 2, 3) is formed of a material at least partially protective against the effect produced by solar irradiation of the skin.

5. A device as claimed in claim 1, characterised by also comprising a cosmetic or curative substance for topical use.

6. A device as claimed in claim 5, characterised in that the

cosmetic or curative substance is of a type able to improve respiration.

7. A device as claimed in claim 6, characterised in that the further substance able to improve respiration is a substance based on menthol.

8. A device as claimed in claim 5, characterised in that the cosmetic or curative substance is included in the adhesive substance (3).

9. A device as claimed in claim 1, characterised in that the deformable element (1) extends substantially over the entire surface of the strip (2).

10. A device as claimed in claim 9, characterised in that the edge of the strip (2) is not covered by the deformable element (1).

11. A device as claimed in claim 1, characterised in that the strip (2) consists of two separate portions connected together only by the deformable element (1) and shaped to adhere to the nasal passages.

12. A method for constructing a device in accordance with claim 1, characterised by comprising a first step in which the elements (1) are punched out of a first sheet of a material suitable for said elements, in such a manner that said elements (1) still remain at least partly attached to said first sheet, a second step in which the punched first sheet is superposed on one face of a second sheet of a material of type suitable for the strips (2) and having on its other face the previously spread substance (3), a third step in which the ends (1a, 1b) of the element (1) are welded to the second sheet, a fourth step in which the first sheet is detached from the second so that the previously punched and welded elements (1) remain in contact with the second sheet, and a fifth step in which the second sheet is punched to

form the strips (2) with the relative deformable elements (1) already fixed to them.

13. A method for constructing a device in accordance with claim 1, characterised by comprising a first step in which a first sheet of a material of type suitable for the elements (1) is superposed on a second sheet of a material of type suitable for the strips (2), and a second step in which said two superposed sheets are simultaneously punched to obtain said elements (1) and the strips (2) and in which the ends (1a, 1b) of said elements (1) are welded to the relative strip (2).

14. A device in accordance with the pre-characterising part of claim 1, characterised by being at least partially transparent to the sun's rays so that that region of the nose to which the device is applied is also irradiated.

15. A device as claimed in claim 15, characterised in that at least one of the constituent parts (1, 2, 3) of the device is formed of or comprises a material at least partially protective against the effect produced by solar irradiation of the skin.

16. A device in accordance with the pre-characterising part of claim 1, characterised by comprising a cosmetic or curative substance for topical use.

17. A device as claimed in claim 16, characterised in that the cosmetic or curative substance is of a type able to improve respiration.

18. A device as claimed in claim 17, characterised in that the further substance able to improve respiration is a menthol-based substance.

19. A device as claimed in claim 16, characterised in that the cosmetic or curative substance is contained in the adhesive substance (3).

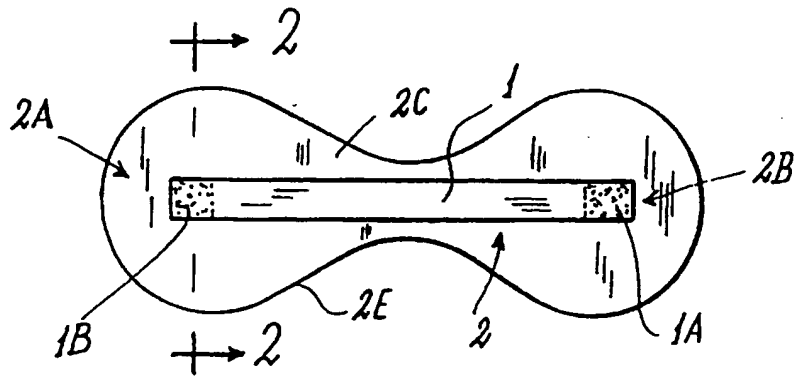


Fig. 1

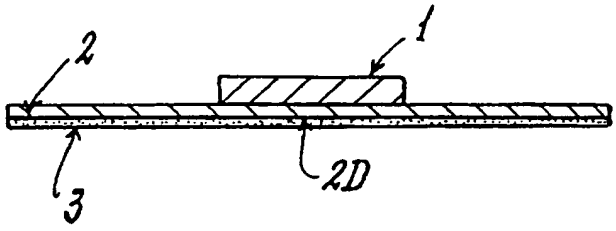


Fig. 2

INTERNATIONAL SEARCH REPORT

Intern al Application No
PCT/EP 96/05818

A. CLASSIFICATION OF SUBJECT MATTER
IPC 6 A61F5/08

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 6 A61F A62B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X Y	WO 94 23675 A (CREATIVE INTEGRATION & DESIGN) 27 October 1994 see page 8, line 1 - page 9, line 28; figures 2,7	1-4,9-15 5-8, 16-19
Y	US 5 479 944 A (PETRUSON BJORN) 2 January 1996 see column 5, line 39 - line 48	5-8, 16-19
X	DE 44 25 554 A (THOMAS JOERG) 18 January 1996 see claim	1
P,X	US 5 553 605 A (MUCHIN) 10 September 1996 see abstract	1

☐ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

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INTERNATIONAL SEARCH REPORT

...formation on patent family members

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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 9423675 A	27-10-94	AU 6629994 A	08-11-94
		US 5549103 A	27-08-96
US 5479944 A	02-01-96	US RE35408 E	24-12-96
DE 4425554 A	18-01-96	NONE	
US 5553605 A	10-09-96	AT 151622 T	15-05-97
		AU 6098196 A	10-02-97
		DE 69600015 D	22-05-97
		EP 0757905 A	12-02-97
		EP 0778014 A	11-06-97
		JP 9024106 A	28-01-97
		WO 9702793 A	30-01-97
		US 5611334 A	18-03-97